

REMARKS

Claims 1, 3, 4, 9, 12 and 13 are now pending in the application. Claims 1, 4, 9 and 12 are amended herein. Amendments have been made to claims 1, 4, 9 and 12 to overcome the rejections of the claims under 35 U.S.C. § 112, second paragraph, based on the Examiner's comments and suggestions. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

PRIORITY

The Examiner acknowledged applicant's claim for foreign priority based on Japanese filed application JP 8-207402, but noted that the applicant has not filed a certified copy of the JP 8-207402 application as required by 35 U.S.C. § 119(b). A certified copy of the JP 8-207402 application will be provided in accordance with 35 U.S.C. § 119(b).

REJECTION UNDER 35 U.S.C. § 112

Claims 1, 3, 4, 9, 12 and 13 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding Claim 1, the Examiner noted that the recitation calling for "a portion other than a surface," in line 3 of Claim 1, is inconsistent with the description in the specification and drawing (Fig. 4), and that it would be clear and consistent to recite the light-shielding member portion as "a portion of a first light-shielding member". Applicant

does not agree that clarity and consistency require that Claim 1 refer to the light shielding member as “a portion of a first light-shielding member”. To be consistent with the specification, however, the Applicant has deleted reference to “portion” and Claim 1 now identifies only “the light-shielding member”. This terminology is consistent with the description of items 6a and 47 in the specification.

The Examiner noted it is unclear which substrate Applicant intends to recite as “one of said substrates,” in lines 9 and 10 of Claim 1; and that there is no antecedent basis for “the same surface of one of said substrates,” in the first line of the fourth paragraph of Claim 1. Claim 1 has been amended to recite in part:

“a pair of substrates each having a front side facing a liquid crystal; said pair of substrates each having a back side facing opposite the liquid crystal, a semiconductor element having a first surface and a second surface, said first surface of said semiconductor element joined to a first portion of the front side of a first one of said substrates, a second portion of said front side of said first one of said substrates is covered with a first light-shielding member, a second light-shielding member is disposed on the back side of the first one of said substrates for shielding light from said semiconductor element, a polarizing plate is arranged on the same substrate side as the second light-shielding member,”.

The Examiner noted that the recitation calling for “a portion of the polarizing plate located outside an effective display region of said polarizing plate,” in the last paragraph of Claim 1 is inconsistent with the description in the specification and drawing (figure 4), in that light-shielding member 6a comprises a polarizing plate 6 located inside an

effective display region of a display panel, and said polarizing plate is an extension of said light-shielding member.

Applicant notes plate 6 is an extension of said light shielding member for the embodiment of Figure 4, but as claimed in amended Claim 1, the polarizing plate is not located inside an effective display region of a display panel, but is "located outside an effective display region of said liquid crystal". This is consistent with the specification which describes one boundary of liquid crystal space R as the sealing agent 5, the surface of which is the boundary of effective display region D in Figure 4.

The Examiner rejected Claim 4 for being indefinite as depending on canceled Claim 2. Claim 4 has been amended to identify dependency only from Claim 1, and to provide consistent terminology with amended Claim 1.

The Examiner noted it is unclear which substrate Applicant intends to recite as "one of said substrates" in the last line of Claim 9. Claim 9 has been amended to be consistent with amended Claim 1 in referring to "said second light-shielding member comprises a planar sheet member having light-shielding properties adhered to the back side of the first one of said substrates."

The Examiner noted the recitation in line 8 of Claim 12 is inconsistent with the description in the specification and drawing (figure 4), in that it appears that the light-shielding member is secured to the outer surface of the first substrate. The Examiner further rejected Claim 12 as being incomplete for omitting essential elements, (MPEP 2172.01), specifically that Claim 12 does not include the light shielding member which covers the semiconductor element's surface that is opposite to the first surface.

Claim 12 has been amended to identify "a second light shielding member; and the second light shielding member covering at least a second surface of said semiconductor member."

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3, 4, 9, 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawaguchi et al. EP 0402 106 A2, IDS Paper No. 7, in view of Hirai et al. EP 0501 413 A2, IDS Paper No. 7. These rejections are respectfully traversed.

Kawaguchi teaches a light-shielding heat releaser, 38, which is formed as either a partial cover over the IC driver 36 (Figures 2 and 3), or enclosing a space on all sides of IC driver 36 (Figures 4-6) except the side facing liquid crystal 33. Kawaguchi does not teach or suggest that light from a non-active surface of the semiconductor element of IC driver 36 should be or is shielded from the active surface of IC driver 36. Kawaguchi shows, but does not identify, a spacer between substrates 31 and 32, and provides no light shield on that side of IC driver 36. Kawaguchi does not teach or suggest that this unidentified spacer shields light from IC driver 36. In addition, Kawaguchi does not teach or suggest a polarizing plate, and consequently cannot provide additional light shielding from a polarizing plate.

In contrast, Applicant provides a light shield 47 around the sides of IC driver 12, including the line of light radiation to the semiconductor element of IC driver 12 from the direction of liquid crystal area R.

Hirai teaches mounting of semiconductor element(s) on a third substrate or printed circuit board. This configuration requires a joint between the third substrate and

the liquid crystal assembly (comprising a liquid crystal layer between two glass substrates). Hirai solves the problem of subsequent joint deflection/fracture by extending an existing polarizing plate 37, by adding length 37a to plate 37, to cover the joint, or by use of an adhesive resin 5. Hirai does not teach or suggest any light shielding benefit from polarizing plate 37, or from the polarizing plate 37a extension. Also, Hirai does not extend plate 37a sufficiently far under printed circuit board 1 to teach or suggest any light shield benefit for drive integrated circuit devices 21. Hirai also does not teach or suggest any specific light shielding for the exposed surfaces (non-mounted surfaces) of drive integrated circuit device 21.

In direct contrast to Hirai, Applicant extends polarizing plate 6 (in extension 6a) specifically to provide a second light shield on the opposite side of substrate 1 from the mounted location of driver IC 12. Applicant also provides a first light shield for all surfaces of driver IC 12.

The Examiner indicated "it would have been obvious for the Kawaguchi et al. device to employ a polarizing plate on the outer surface of one of the substrates for polarizing light passing through the liquid crystal layer (33)." Applicant notes the claimed invention employs a polarizing plate outside of the area of the liquid crystal display, not to polarize light passing through the liquid crystal layer, but to shield light from the semiconductor element, which is mounted outside of the display region R of the liquid crystal layer.

Applicant submits that the combination of Kawaguchi, which does not teach light shielding all surfaces of integrated circuit members, and does not teach or suggest polarization plates, with Hirai, which provides an extension of a polarization plate for

structural purposes, does not render obvious the Applicant's invention, based on the above and the following:

I. Applicant's invention, as a whole, provides light shielding for all faces of the integrated circuit member(s); and

II. The references, Kawaguchi and Hirai, when considered as a whole, neither separately or in combination teach or suggest light shielding the complete integrated circuit member(s). Kawaguchi does not teach the use of polarization plates in an invention intended to identify solutions for incident light on integrated circuit members, nor does it teach the benefit of shielding the entire integrated circuit member(s). Hirai teaches use of polarization plates, but does not teach light shielding at all. There is therefore no motivation from the teachings of the combination of these references to completely light shield integrated circuit members and to achieve this in part through use of polarization plates.

In summary, Applicant respectfully submits that Kawaguchi and Hirai, either singly or in combination, fail to teach or suggest the claimed invention. The Examiner is respectfully requested to withdraw the rejection of Claims 1, 3, 4, 9, 12 and 13 under 35 U.S.C. § 103(a).

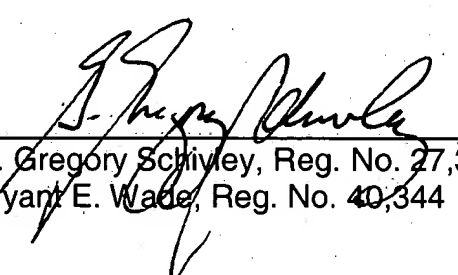
CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office

Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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ATTACHMENT FOR CLAIM AMENDMENTS

The following is a marked up version of each amended claim in which underlines indicates insertions and brackets indicate deletions.

1. (Twice Amended) A liquid-crystal display device comprising:

[having] a pair of substrates each having a front side facing a liquid crystal;

said pair of substrates each having a back side facing opposite the liquid crystal, [which are opposite to each other through a liquid crystal],

[and] a semiconductor element having a first surface and a second surface,

[which is] said first surface of said semiconductor element joined to a first portion of the front side of a first [at least] one of said substrates,

[characterized in that a portion other than a surface, which is joined to one of said substrates, of the surfaces of said semiconductor element] a second portion of said front side of said first one of said substrates is covered with a first light-shielding member [portion],

a second light-shielding member is disposed on the back side of the first one of said substrates for shielding light [being] toward said semiconductor element, [is arranged on a surface, opposite to the surface, to which said semiconductor element is joined, of the surfaces of one of said substrates; and]

a polarizing plate is arranged on the same [surface of one of said substrates as the] substrate side as the second light-shielding member, and

said second light-shielding member is constituted by a portion of the polarizing plate, said polarizing plate portion located outside an effective display region of said [polarizing plate] liquid crystal.

4. (Twice Amended) [A] The liquid-crystal display device according to [any one of claim[s] 1 [to 3],

characterized in that [said semiconductor element is joined to one of said substrates such that] said first surface of said semiconductor element is an active surface of said semiconductor element [faces said] facing the front side of the first one of said substrates.

9. (Three Times Amended) [A] The liquid-crystal display device according to Claim 1, characterized in that said second light-shielding member comprises a planar sheet member having light-shielding properties adhered to [a surface] the back side of the first one of said substrates.

12. (Twice Amended) A liquid crystal display device comprising:

a first substrate having inner and outer surfaces;

a second substrate having inner and outer surfaces;

a liquid crystal disposed between said inner surfaces of said first and second substrates;

a semiconductor element having a first surface fixed to a portion of said inner surface of said first substrate; [and]

a first light shielding member secured to [one of] said first [and second] substrate[s] at a location spaced apart from said portion of said inner surface where said semiconductor element is fixed so as to shield at least part of said semiconductor element from non-desired light;

[wherein] said first light shielding member [further comprises] being a polarizing plate secured to said outer surface of said first substrate;

a second light shielding member; and

the second light shielding member covering at least a second surface of said semiconductor member.